

Patent Claims

1. Starting unit (1; 1.2; 1.2b; 1.2c)
 - 1.1 with an input (E) which can be coupled to a drive and an output (A) that can be coupled to a drive part
 - 1.2 with a starting element (4) in the form of a hydrodynamic component, comprising at least one primary turbine wheel (6) and one secondary wheel (7) which, together, form a working chamber (8) which can be filled with operating material;
 - 1.3 with an engaging and disengaging clutch (9), comprising at least two clutch elements (12, 13) that can be brought into frictionally engaged contact with one another in a direct or indirect manner via additional intermediate elements, the first clutch element (12) being at least indirectly connected to the input in a rotationally fixed manner and the second clutch element (13) being at least indirectly connected to the output in a rotational fixed manner and an adjusting device (15, 14) assigned thereto;
 - 1.4 with a stationary or rotating housing (17, 18) that surround at least one of the turbine wheels while forming an adjoining chamber (46);
 - 1.5 the adjusting device (15) of the engaging and disengaging clutch (9) is situated in the adjacent chamber (46) while forming a first operating material supply channel or space (19) and can be subjected to the action of pressure prevailing therein;
 - 1.6 the operating material supply channel or space (19) can be connected at least indirectly to an operating means supply source (41);
characterized by the following features:
 - 1.7 with means (2) for influencing the transmission behavior of the hydrodynamic component (5), comprising at least one mechanical built-in part (3) that acts at least indirectly upon the working circuit ensuing inside the working chamber (8);
 - 1.8 with an adjusting device (26, 31) assigned to the mechanical built-in part (3) and means for subjecting the adjusting device to a differential pressure, which results from the pressure in the first operating means supply channel or space (19) or in a channel or space (30, 20) coupled thereto or in the interior of the housing (30) and to a control pressure.

2. Starting unit (1; 1.2; 1.2b; 1.2c) according to Claim 1, characterized by the following features:
- 2.1 the adjusting device (26, 31) of the mechanical built-in parts (3) comprises at least one cylinder-piston unit (36), comprising at least one piston element (34) guided in a cylinder (32), which with this forms at least two working chambers (35, 25) which can be subjected to pressure media at two front sides (33, 37) pointing away from one another – a first working chamber and a second working chamber (35);
 - 2.2 the first working chamber (25) is at least indirectly connected to the first operating means supply channel or space (19) or to the operating means supply channel (20), while the second working chamber (35) is coupled to a control pressure supply system (67);
 - 2.3 the piston (34) is connected to the mechanical built-in parts (3) at a front side (33) turned away from the front side (37) subjected to the control pressure.
3. Starting unit (1; 1.2; 1.2b; 1.2c) according to Claim 2, characterized by the fact that the piston (34) at the front side (33) coupled to the mechanical built-in parts (3) is subjected to pressure by the operating materials from the first operating means supply channel or space (14) or by a channel or space (30, 20) coupled thereto.
4. Starting unit (1; 1.2; 1.2b; 1.2c) according to Claim 2 or 3, characterized by the fact that the control pressure supply system (67) comprises at least a constant or controllable pressure media source, which is coupled via at least one valve device (39, 40) to the adjusting device (31).
5. Starting unit (1; 1.2; 1.2b; 1.2c) according to any of Claims 1 through 4, characterized by the fact that the pressure media-activated mechanical built-in parts (3) are carried either on the housing (17, 18) and/or on a turbine wheel (6, 7).

6. Starting unit (1; 1.2; 1.2b; 1.2c) according to any of Claims 1 through 5, characterized by the fact that the adjusting devices (31, 26) assigned to the individual mechanical built-in parts (3) are supported on the housing (17, 18) that is stationary or coupled to the primary turbine wheel (6) in a rotationally fixed manner.
7. Starting unit (1; 1.2; 1.2b; 1.2c) according to any of Claims 4 through 6, characterized by the fact that the coupling to the control pressure source (67) is conducted through the wall of the housing (17, 18) or an element coupled to the individual turbine wheel (6, 7) in a rotationally fixed manner.
8. Starting unit (1; 1.2; 1.2b; 1.2c) according to any of Claims 1 through 7, characterized by the fact that the pressure medium is conducted from the operating means supply channel and/or space (19) via a connection line connected at least indirectly thereto to the adjusting device (31, 26).
9. Starting unit (1; 1.2; 1.2b; 1.2c) according to Claim 8, characterized by the fact that the connection line is carried in the housing (17, 18).
10. Starting unit (1; 1.2; 1.2b; 1.2c) according to any of Claims 1 through 9, characterized by the fact that the pressure-media activated mechanical built-in parts (3) comprise an annular slide valve (27) which can be moved in axial direction, which is formed by an element extending in circumferential direction and at least partially annular.
11. Starting unit (1; 1.2; 1.2b; 1.2c) according to any of Claims 1 through 10, characterized by the fact that the pressure-media activated mechanical built-in parts (3) are formed by a bolt-shaped element that can be moved in axial direction.
12. Starting unit (1; 1.2; 1.2b; 1.2c) according to any of Claims 1 through 11, characterized by the fact that mechanical built-in parts (3) are formed by a sub-region of the wall (43) of a turbine wheel (6, 7), which is used to conduct the flow circuit.

13. Starting unit (1; 1.2; 1.2b; 1.2c) according to any of Claims 1 through 12, characterized by the fact that the pressure-media activated mechanical built-in parts (3) are assigned to the primary turbine wheel (6).
14. Starting unit (1; 1.2; 1.2b; 1.2c) according to any of Claims 1 through 12, characterized by the fact that the pressure-media activated mechanical built-in parts (3) are assigned to the secondary turbine wheel (7).
15. Starting unit (1; 1.2; 1.2b; 1.2c) according to any of Claims 1 through 14, characterized by the fact that the control pressure media supply system (67) contains components of the operating means supply and conductance system (16).
16. Starting unit (1; 1.2; 1.2b; 1.2c) according to Claim 15, characterized by the fact that the control pressure source (44) is formed by the operating means source (41).
17. Starting unit (1; 1.2; 1.2b; 1.2c) according to any of Claims 1 through 17, characterized by the fact that control pressure media supply system (67) is formed by a hydraulic or pneumatic system arranged in the environment of the starting unit (1, 1.2).
18. Starting unit (1; 1.2; 1.2b; 1.2c) according to Claim 17, characterized by the fact that the control pressure source (44) is formed by a space in which the adjusting device is relieved.